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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER ELLIS, RYAN H	
			ART UNIT 3745	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/586,306	<b>Applicant(s)</b> OCHIAI ET AL.	
	<b>Examiner</b> RYAN H. ELLIS	<b>Art Unit</b> 3745	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 15 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☒ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/14/2006</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 15 and 16 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiply dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 7-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,704,759 to Draskovich et al. (Draskovich) in view of US Patent No. 6,190,124 to Freling et al. (Freling).

#### In Reference to Claim 1

Draskovich teaches:

A compressor for compressing air applied to a jet engine (abstract), the compressor characterized by comprising: a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium (col. 2, ll. 43-44) rotor blades (10) at even intervals and being rotatable around a case axial center of the compressor case, wherein each of the titanium rotor blades includes; a

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rotor blade main body composed of a titanium alloy; and an abrasive coating (11) having abrasiveness formed at a blade pressure side of the deposition layer.

Draskovich fails to teach:

A titanium compressor case composed of a titanium alloy and a deposition layer formed at a tip end portion of the rotor blade main body.

Freling teaches:

A deposition layer (bond coat 38) formed at a tip end portion of the rotor blade main body. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the blade coating of Draskovich with the deposition layer of Freling for the purpose of increasing the adhesion of the abrasive layer (col. 4, ll. 40-44).

It would have been equally obvious to one having ordinary skill in the art at the time the invention was made to use titanium on other components such as the compressor casing as an engineering expedient as a carrying forward of the use of titanium in the blades as taught by Draskovich for the purpose of increasing the strength of the compressor casing.

Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon

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the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

In Reference to Claim 2

Draskovich teaches:

A compressor for compressing air applied to a jet engine (abstract), the compressor characterized by comprising: a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium (col. 2, ll. 43-44) rotor blades (10) at even intervals and being rotatable around a case axial center of the compressor case, wherein each of the titanium rotor blades includes; a rotor blade main body composed of a titanium alloy; and an abrasive coating (11) having abrasiveness formed at a blade pressure side of the deposition layer.

Draskovich fails to teach:

A titanium compressor case composed of a titanium alloy and a deposition layer formed at a tip end portion of the rotor blade main body.

Freling teaches:

A deposition layer (bond coat 38) formed at a tip end portion of the rotor blade main body. It would have been obvious to one having ordinary skill in the

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art at the time the invention was made to modify the blade coating of Draskovich with the deposition layer of Freling for the purpose of increasing the adhesion of the abrasive layer (col. 4, ll. 40-44).

It would have been equally obvious to one having ordinary skill in the art at the time the invention was made to use titanium on other components such as the compressor casing as an engineering expedient as a carrying forward of the use of titanium in the blades as taught by Draskovich for the purpose of increasing the strength of the compressor casing.

Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

In Reference to Claim 3

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Draskovich as modified by Freling teaches:

The compressor recited in claim 1 or claim 2 (see rejections above) with fused portions. The layers are fused onto the blade and therefore would have a thickness.

Draskovich fails to teach:

The specific thickness of the fused portions.

Since Applicant has not disclosed that having the fused portions at this specific thickness solves any stated problem or is for any particular purpose above the fact that the fused thickness increases the adhesion strength of the coating to the blade and it appears that the fused portions of Draskovich as modified by Freling would perform equally well with a thickness as claimed by Applicant, it would have been an obvious matter of design choice to modify the fused portions of Draskovich as modified by Freling by utilizing the specific thickness as claimed for the purpose of increasing the adhesion strength of the coating to the blade.

In Reference to Claim 7

Draskovich as modified by Freling teaches:

The compressor recited in claim 1 or claim 4 (see rejection 1 above and rejection 4 below), characterized in that the ceramic is any one material or any two or more mixed materials from cBN, TiC, TiN, TiAlN, TiB<sub>2</sub>, WC, SiC, Si<sub>3</sub>N<sub>4</sub>, Cr<sub>3</sub>C<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, ZrO<sub>2</sub>-Y, ZrC, VC and B<sub>4</sub>C.

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The ceramic was rejected as part of the process above (claims 1 and 4) and is therefore similarly rejected as being part of the process for making the product.

In Reference to Claim 8

Draskovich teaches:

A titanium rotor blade applied to a compressor in a jet engine (abstract), the titanium rotor blade characterized by comprising: a rotor blade (10) main body composed of a titanium alloy (col. 2, ll. 43-44); an abrasive coating (11) having abrasiveness formed at a blade pressure side of the deposition layer.

Draskovich fails to teach:

A deposition layer formed at a tip end portion of the rotor blade main body.

Freling teaches:

A deposition layer (bond coat 38) formed at a tip end portion of the rotor blade main body. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the blade coating of Draskovich with the deposition layer of Freling for the purpose of increasing the adhesion of the abrasive layer (col. 4, ll. 40-44).

Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that



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appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

In Reference to Claim 9

Draskovich teaches:

A titanium rotor blade applied to a compressor in a jet engine (abstract), the titanium rotor blade characterized by comprising: a rotor blade (10) main body composed of a titanium alloy (col. 2, ll. 43-44); an abrasive coating (11) having abrasiveness formed at a blade pressure side of the deposition layer.

Draskovich fails to teach:

A deposition layer formed at a tip end portion of the rotor blade main body.

Freling teaches:

A deposition layer (bond coat 38) formed at a tip end portion of the rotor blade main body. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the blade coating of Draskovich with the deposition layer of Freling for the purpose of increasing the adhesion of the abrasive layer (col. 4, ll. 40-44).

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Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

#### In Reference to Claim 10

Draskovich as modified by Freling teaches:

The compressor recited in claim 8 or claim 9 (see rejections above) with fused portions. The layers are fused onto the blade and therefore would have a thickness.

Draskovich fails to teach:

The specific thickness of the fused portions.

Since Applicant has not disclosed that having the fused portions at this specific thickness solves any stated problem or is for any particular purpose above the fact that

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the fused thickness increases the adhesion strength of the coating to the blade and it appears that the fused portions of Draskovich as modified by Freling would perform equally well with a thickness as claimed by Applicant, it would have been an obvious matter of design choice to modify the fused portions of Draskovich as modified by Freling by utilizing the specific thickness as claimed for the purpose of increasing the adhesion strength of the coating to the blade.

In Reference to Claim 14

Draskovich as modified by Freling teaches:

The compressor recited in claim 8 or claim 11 (see rejection 8 above and rejection 11 below), characterized in that the ceramic is any one material or any two or more mixed materials from cBN, TiC, TiN, TiAlN, TiB<sub>2</sub>, WC, SiC, Si<sub>3</sub>N<sub>4</sub>, Cr<sub>3</sub>C<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, ZrO<sub>2</sub>-Y, ZrC, VC and B<sub>4</sub>C.

The ceramic was rejected as part of the process above (claims 1 and 4) and is therefore similarly rejected as being part of the process for making the product.

4. Claims 4-6 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,704,759 to Draskovich et al. (Draskovich).

In Reference to Claim 4

Draskovich teaches:

A compressor for compressing air applied to a jet engine (abstract), the compressor characterized by comprising: a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium (col. 2, ll. 43-44)

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rotor blades (10) at even intervals and being rotatable around a case axial center of the compressor case, wherein each of the titanium rotor blades includes; a rotor blade main body composed of a titanium alloy; and an abrasive coating (11) having abrasiveness formed at portion ranging from a blade pressure side to a leading end side of the rotor blade main body.

Draskovich fails to teach:

A titanium compressor case composed of a titanium alloy.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use titanium on other components such as the compressor casing as an engineering expedient as a carrying forward of the use of titanium in the blades as taught by Draskovich for the purpose of increasing the strength of the compressor casing.

Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir.

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1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

In Reference to Claim 5

Draskovich teaches:

A compressor for compressing air applied to a jet engine (abstract), the compressor characterized by comprising: a compressor rotor arranged inside the compressor case, the compressor rotor including plural titanium (col. 2, ll. 43-44) rotor blades (10) at even intervals and being rotatable around a case axial center of the compressor case, wherein each of the titanium rotor blades includes; a rotor blade main body composed of a titanium alloy; and an abrasive coating (11) having abrasiveness formed at portion ranging from a blade pressure side to a leading end side of the rotor blade main body.

Draskovich fails to teach:

A titanium compressor case composed of a titanium alloy.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use titanium on other components such as the compressor casing as an engineering expedient as a carrying forward of the use of titanium in the blades as taught by Draskovich for the purpose of increasing the strength of the compressor casing.

Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric

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deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

In Reference to Claim 6

Draskovich teaches:

The compressor recited in claim 4 or claim 5 (see rejections above) with a fused portion. The layer is fused onto the blade and therefore would have a thickness.

Draskovich fails to teach:

The specific thickness of the fused portion.

Since Applicant has not disclosed that having the fused portion at this specific thickness solves any stated problem or is for any particular purpose above the fact that the fused thickness increases the adhesion strength of the coating to the blade and it appears that the fused portion of Draskovich would perform equally well with a thickness as claimed

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by Applicant, it would have been an obvious matter of design choice to modify the fused portion of Draskovich by utilizing the specific thickness as claimed for the purpose of increasing the adhesion strength of the coating to the blade.

In Reference to Claim 11

Draskovich teaches:

A titanium rotor blade applied to a compressor in a jet engine (abstract),  
the titanium rotor blade characterized by comprising: a rotor blade (10) main  
body composed of a titanium alloy (col. 2, ll. 43-44); an abrasive coating (11)  
having abrasiveness formed at a blade pressure side of the deposition layer.

Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

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In Reference to Claim 12

Draskovich teaches:

A titanium rotor blade applied to a compressor in a jet engine (abstract),  
the titanium rotor blade characterized by comprising: a rotor blade (10) main  
body composed of a titanium alloy (col. 2, ll. 43-44); an abrasive coating (11)  
having abrasiveness formed at a blade pressure side of the deposition layer.

Note that the claimed phrase “formed by” is being treated as a product-by-process limitation; that is, the abrasive and deposition layers can be formed by the electric deposition process. As set forth in MPEP 2113, product by process claims are NOT limited to the manipulations of the recited steps, only to the structure implied by the steps. Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the two. Once a product appearing to be substantially the same or similar is found, a 35 U.S.C. 102/103 rejection may be made and the burden is shifted to applicant to show an unobvious difference. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Thus, even though Draskovich is silent as to the process used to form the deposition and abrasive layers, it appears that the product of Draskovich would be the same or similar as the blade layers as claimed.

In Reference to Claim 13

Draskovich teaches:



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The compressor recited in claim 11 or claim 12 (see rejections above) with a fused portion. The layer is fused onto the blade and therefore would have a thickness.

Draskovich fails to teach:

The specific thickness of the fused portion.

Since Applicant has not disclosed that having the fused portion at this specific thickness solves any stated problem or is for any particular purpose above the fact that the fused thickness increases the adhesion strength of the coating to the blade and it appears that the fused portion of Draskovich would perform equally well with a thickness as claimed by Applicant, it would have been an obvious matter of design choice to modify the fused portion of Draskovich by utilizing the specific thickness as claimed for the purpose of increasing the adhesion strength of the coating to the blade.

***Allowable Subject Matter***

5. Claim 17 is allowed.

***Conclusion***

1. Although no art rejection has been applied to claims 15 and 16, patentability is reserved pending Applicant's response to the objections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN H. ELLIS whose telephone number is (571)270-7414. The examiner can normally be reached on Monday-Friday; 7:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ED LOOK can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RYAN H. ELLIS/  
Examiner, Art Unit 3745

/Edward K. Look/  
Supervisory Patent Examiner, Art Unit 3745